FAQ

General Questions

What is BVD?
Bovine Viral Diarrhoea is a viral disease (caused by a virus), which, although it primarily affects cows, can also affect other ruminants (sheep, goats, wild ruminants). Animals affected show an array of clinical signs, however, with a majority of infected animals do not showing any clinical signs at all. Sometimes there are diarrhoea, fever, mucosal erosions etc. In some cases the animals die of the disease. The so-called mucosal disease, a special variant of BVD, is particularly severe and always fatal. World-wide, BVD causes considerable economic losses every year, therefore various countries have decided to actively fight or even eliminate the disease.

What is mucosal disease?
Mucosal disease is one of the diseases that may be triggered by BVD virus. Animals affected often have (bloody) diarrhoea, a high temperature and mucosal lesions in the mouth, as well as ulcerations at the muzzle, the nose, the rim of the hoof and in the interdigital cleft. The disease is fatal, animals are not generally expected to live longer than two to three weeks, although there are always exceptions.

What animals catch mucosal disease?
Mucosal disease can be caught only by animals that were infected in utero by a special type of BVDV (a virus of the so called non-cytopathic biotype). These are persistently infected animals that carry the virus throughout their lives and continuously shed virus. If such animals are, in the course of their lives, challenged by a similar virus of the second biotype (a so-called cytopathic virus) they may catch mucosal disease.

What is a PI animal?
Persistently (continuously) infected animals are the result of the BVDV infection during pregnancy of an antibody-negative mother. The virus is transferred to the foetus. The point in time of infection and the biotype of the virus involved are of prime significance: the calves end up as persistently infected animals only if the infection takes place between the 40th and the 120th day of pregnancy and, moreover, if the infecting virus is of the non-cytopathic biotype. At that period in pregnancy the immune system of the foetus has not yet completely developed, therefore it cannot fight the virus. Actually, the developing immune system recognises the virus as part of self, therefore the virus is free to multiply during the entire life of the animal. PI animals continuously shed virus in large quantities. Therefore, epidemiologically (for the spreading of the virus) these animals are extremely important. Generally, PI animals appear normal, except for a few that develop poorly. In Switzerland, approximately 1 % of animals are persistently infected. PI animals can also catch mucosal disease.

Do all PI animals get mucosal disease?
In view of the fact that PI animals are generally killed as soon as they are discovered, it is not possible to tell whether every single individual would actually catch mucosal disease. Although a large part of the PI animals die from MD within the first two years of life, animals that live longer do indeed exist and can produce several persistently infected offspring.

What are biotypes?
A BVD virus is always of one of two biotypes. The so-called cytopathic biotype is capable of damaging cells used in the lab for the production of virus. However, BVD viruses of the non-cytopathic biotype have no damaging effect on cells. The ncp BVDV plays a decisive role in the generation of persistently infected (PI) animals, whereas the cp BVDV can trigger mucosal disease in PI animals.

What are genotypes?
To date we know of two genotypes of BVD virus (BVDV 1 and BVDV 2), the difference between the two being in the genetic substance. BVDV 2 is commonly known for its more severe disease symptoms, although recently instances of fatalities have also become known that were induced by BVDV 1. In Switzerland only BVDV 1 is known to occur.

Is BVD a notifiable disease?
In Switzerland persistent BVD is a disease that has to be monitored and is therefore notifiable. By contrast, acute BVD is not notifiable.

Does BVD pose a threat to humans?
No, BVD does not affect humans.

All my animals are seropositive. Do I have to worry?
Yes. The offspring of seropositive animals are seronegative, i.e. they are susceptible to BVDV. Seronegative animals that have been bought in the meantime are also at risk.

Is the offspring of an immune mother also immune?
No. An animal has to have had contact with BVD in order to acquire immunity. However, in the first period of life, calves profit from maternal antibodies that they ingest via colostrum, even though this protection is lost after 4 – 6 months.

Which animals are immune?
Animals that have already been infected with BVD once are immune. This includes animals that were infected in utero in the second part of gestation (approx. after day 160). Animals that have never been in contact with the virus are not immune. PI animals are not immune, either!

Can BVD be treated?
There is no therapy against BVD. Affected animals can be treated symptomatically. There is no sensible treatment for mucosal disease, the animal should be euthanized immediately.

BVD and vaccination

Which vaccines are recognised in Switzerland, how efficient are they and what is the frequency of follow-up vaccinations?
The vaccines officially recognised in Switzerland are “Rispoval VVD/MD (MLV cBVDV) and Bovilis BVD-MD” (inactivated). We ourselves do not have any experience with these vaccines and are therefore unable to comment on their efficacy. Experts disagree with regard to the degree of the efficacy of BVD vaccines. It must also be said that in the USA there exist about 150 (!) diffferent vaccines for BVD without having had any beneficial effect on the epidemiological situation. According to the manufacturers, the vaccinations must be repeated (Rispoval two follow-up vaccinations after three weeks and six weeks, and Bovilis every six months).

Recently, we discovered a virus-shedding animal in our herd. This animal was removed. Is it sensible to vaccinate the remaining animals?
The presence of a persistently infected animal in a herd means that all the other animals present at the same time have very probably been “vaccinated” by their contact with this virus-shedding animal. In contrast to a vaccination, this natural infection results in protection for life. Therefore, a vaccination of these animals after the event makes little sense and is unnecessarily costly. It may possibly be a good idea to vaccinate animals that are going be at a higher risk of infection in their early pregnancy (e.g. during transhumance) prior to insemination.

Can vaccination prevent Mucosal Disease in a PI animal?
No. Vaccination of PI animals does not protect against MD. However, there are some documented cased that MD was triggered by vaccination with MLV.

BVD and fertility problems

Four of my cows have had abortions during this spring and summer. The vet checked the afterbirth for bacteria but found nothing. Could these problems be related to BVD?
A BVD virus infection cannot be excluded in such a case. However, BVD is only one of various possible triggers of abortion. In examinations involving a large number of animals BVDV was found in about 5 % of aborted foetuses. It must also be considered that an examination of the afterbirth is difficult and results in a positive finding in about 30% of cases. In the case in question it might be a good idea to check the calves and the foetuses of pregnant cows for BVD in order to find out whether there is evidence of a PI animal among them.

My cows have had more frequent problems relating to pregnancy recently. Older animals are never on heat. How can I tell whether these problems are due to BVD or not?
Most (older) cows in Switzerland are immune to BVDV and should therefore be protected. The problem would only be related to BVD if a cow that was not immune suddenly had antibodies against BVDV following a fertility problem. Present knowledge dictates that in cows BVDV can only cause problems during a phase of 2-3 weeks (initial infection); usually there are mild or no symptoms. Therefore, fertility problems caused by BVDV can at the most occur once in the life of a cow – and only if it is in the early stages of pregnancy at the time of initial infection.

I suspect that there is BVD on my farm. There are more frequent abortions and non-viable calves are born. What shall I do?
BVD is only one of a number of causes of abortion; i.e., first the problem needs to be identified. For instance,BVD virus can be isolated from a blood or skin sample of one of the non-viable calves. Unfortunately, nothing can be done if cows in early stages of their pregnancies infect themselves with BVDV for the first time. During this pregnancy only, the cows may have abortions or non-viable virus-shedding calves are born.Subsequently, all cows affected are protected, i.e. a vaccination is superfluous in the case of these cows.
If several animals show the symptoms of BVD infection at around the same time, it is probable that all those animals have had contact with a virus-shedding animal (persistently infected animal). This can be a newly born calf or a calf that has recently been bought or, alternatively, the cows (heifers) were together with other animals (animal fair or transhumance). It is advisable to find the virus-shedding animal and eliminate it in order to prevent more damage, for

instance by infection of heifers in early pregnancy that had been kept elsewhere and are then returned to their farm.

BVD and problems with calves

I have a calf rearing farm and buy 20 to 25 calves every year. I suspect I have BVD on the farm, as I frequently have problems. Can the vet examine my animals? At what age would the animals have to be tested?
Every calf that is bought from another farm carries an array of infectious agents from the farm of its origin and is, at the same time, exposed to those of the other animals. This inevitably leads to health problems (coughs, diarrhoea, etc).
If there is a virus-shedding animal in the herd, all the animals except the virus-shedding animal itself will have antibodies within a short period of time. Therefore, the following procedure has proved to be useful for a herd investigation: An antibody test is first done in a group (6-10 animals)of animals older than 6 months (calves and heifers). A large number of antibody positive animals means that there is a virus-shedding animal in the herd. In this case it is recommended to investigate the entire herd, and then test antibody-negative animals for the virus. Animals younger than six months should be tested by means of RT-PCR or skin biopsy. With your agreement the vet can organise the blood sampling and send the samples to a lab. Naturally, we are happy to advise you.

Every one of my calves has diarrhoea 10 days after birth. Could there be a connection with BVD?
Although a connection with BVD cannot be excluded it is rather unlikely. There are other types of diarrhoea caused by rotaviruses, corona viruses etc. and it might also be a dietary problem. In order for all calves to become infected with BVD virus there would have to be a virus-shedding animal (persistently infected animal) in the stable and the calves would have had either no colostrum or BVDV negative colostrum.

Recently, I bought a fattening calf from a farmer. The calf was small and of poor growth. I bought it nevertheless because I depend on bio calves. The first thing I noted was the round shape of the nose. It has intermittent diarrhoea, not much appetite and has days of apathy. It is now two months old and weighs 40 kg. Is it possible for this calf to infect the other 12 in the herd? Is it sensible to fatten this calf? How will it develop? Should I talk to the seller again?
The calf described might well be a virus-shedder (persistently infected animal), i.e. a calf infected with BVDV that shows the typical symptoms of an animal of poor growth. In this case the other 12 calves might experience a transient BVDV infection with the subsequent formation of antibodies. Whether you would want to fatten such a poorly growing animal is a question of the cost. The meat is edible if there are no other diseases. Nobody can tell how it would develop further but it can be assumed that the desired fattening quality will not be achieved.
As, in addition, the infection has already made the rounds in the herd and nothing can be undone, an investigation is not necessarily advisable. As far as we know, there is no legal obligation on the part of the seller to take the animal back nor do we know of any liability cases regarding the selling of a virus-shedder (persistently infected animal).
If you keep or have kept heifers or cows in the early stages of pregnancy in the immediate vicinity of the calf in question we would recommend an investigation of the affected rearing calves.

BVD and embryo transfer

If the best cow in my stable were a virus-shedding animal (persistently infected animal), could I continue to use it for breeding purposes?
Various investigations have shown that embryos of virus-shedding cows (persistently infected animals) were not a priori infected with BVDV and following thorough special washing procedures resulted neither in the infection of the carrying animal nor in the birth of virus-shedding calves. Under these conditions, a valuable virus-shedding breeding cow may, theoretically, give birth to virus-free offspring. However, complications cannot be excluded and to be on the safe side the new-born calves would have to be virus-tested.

BVD and breeding cow management

I have 13 breeding cows and send heifers and cows to different alps for the summer. Every spring for the past three years the calves have had attacks of diarrhoea. Two to 3 cows may have BVD. What do you need to watch especially when you have breeding cows in order to avoid damage caused by BVD/MD?
If there are no virus-shedding animals (PI animals) in the herd you must ensure that no animals in the early stage of pregnancy come into contact with heifers or cows from other herds, just as you would if you had milking cows.
If there are PI animals among the cows the following applies: a) all offspring of such cows are also PI animals with all the consequences that entails, i.e. they may grow poorly, are not viable or often sick; b) the cows and their offspring can catch mucosal disease at any time in their lives and die from that; c) all new animals (calves and animals that have been bought) will automatically be infected with BVDV. Non-pregnant animals usually experience mild symptoms and generate antibodies, which is an advantage for any future pregnancy.
As the meat of PI animals is safe to eat, they should not necessarily be given any medicine if any symptoms of mucosal disease appear. It is better if they are slaughtered as fast as possible.

BVD and transhumance

Three of my heifers spend the summer on an alp where the cows of the cowherd have the virus and have aborted. What

do I have to do in autumn when the heifers return in order to avoid an infection?
If the heifers came into contact with the animals of the cowherd while they were in the early stages of pregnancy they may abort or else give birth to virus-shedding animals (PI animals). If this is the case it is advisable to keep the cows involved and their calves separate from the other animals at birth and for a few days afterwards and to test for BVD if the calves are breeding calves. Otherwise, the heifers will generate antibodies and will therefore be protected. There is thus no danger for the herd.

BVD and bulls, or artificial inseminationCan a breeding bull bring BVD into its home farm?
If it is not a PI animal the same applies to bulls as to every other animal that has frequent contact with other animals and herds. There is indeed a risk of bringing an infection and passing it on to the other animals in the herd. However, most breeding bulls get infected at an early age and therefore have antibodies; after that they are immune.

Can BVD be brought into a herd by artificial insemination?
All young bulls in Switzerland are thoroughly tested for BVD. The same applies to other countries and thus for imported semen.